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one to three weeks, but it was extremely doubtful whether death was due to the dye.

Experiments carried out in this laboratory with three German preparations and one of American make show great variation in general physical and chemical properties. Melting points vary by as much as 70 degrees, the color of solutions in oil range from a deep orange to a venous red, and their degree of solubility in neutral, alkaline or acid solutions is not the same.

The impure preparations were found in every case to be highly toxic, causing rabbits to die within 24 hours.

Full details of the completed experiments will be published later.

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#### SCIENTIFIC BOOKS

*Lord Lister.* By SIR RICKMAN J. GODLEE, Bart., pp. xix, 6761. Macmillan & Co., Ltd. London. 1917.

This is the biography of a man who never wrote a book yet whose work so profoundly transformed surgery that "Before Lister" and "After Lister" in surgical chronology are the counterparts of B.C. and A.D. in Christian chronology!

As a biography the story is too detailed to be easy perusal for the non-medical reader as compared, for example, with Vallery-Radot's "Pasteur"; but as the authorized biography by Lister's nephew and assistant, who had access to all his letters, remarkable commonplace books and other data, and as a narrative intended to trace the development of Lister's antiseptic system for the enlightenment of the profession in future ages, it is none too long nor too minute. It is more than a biography. It is an important historical document.

Joseph Lister was born a Quaker and continued in the Society of Friends until his marriage with the daughter of his professor of surgery, Mr. Syme, in 1856, when he withdrew from the society and later joined the Episcopal Church in Scotland. In his correspondence with his family, however, he always used the plain language, but in a form which

differs from that of our Philadelphia Friends and often grates upon both eye and ear. He simply replaces "you" by "thee," the plural verb being retained, *e. g.*, Thee say, are, have, etc.

He witnessed the first operation ever performed in Great Britain under ether anesthesia by Liston in December, 1846. Yet as Godlee points out it was hard to displace the old slap-dash surgery which was no longer necessary when pain had been abolished. Yet even in my own student days (1860-62), I have seen stop-watches pulled out to time how many seconds were required by Gross and Pancoast to whip a stone out of the bladder.

Lister's first work was in anatomy and pathology, especially in inflammation. Few remember that it was he who in 1853 first demonstrated the circular and the radiating muscular fibers in the iris.

A visit to Edinburgh for observation changed his whole life, for he settled there first as a student, then as an extra-mural lecturer, and there found his model wife whose death in 1893 was such a terrible blow to him.

In 1860 he was appointed regius professor of surgery in Glasgow. The very next year he attributed suppuration not to the oxygen of the air as all the chemists and everybody else were teaching, but to fermentation. His first two papers introducing the antiseptic system were not published until 1867.

Sir Rickman gives an excellent account of the warfare on "hospitalism" and puerperal fever by Simpson, Erichsen and Semmelweis, but does not even mention our own Holmes, whose finger pointed the way as early as 1843. The echoes of his battle royal with Meigs and Hodge, of Philadelphia, were still reverberating when I was pursuing my medical studies. The methods of treatment of wounds which I was taught, and which I practised during the Civil War and down to 1876, are well described. Then follows a discussion of fermentation and putrefaction, and next the history of the rise and progress of Lister's antiseptic system, its modifications and its eventual triumph.

The "Story of the Four Flasks," which became, as Godlee well says, "classical," is finally completely told. These were partly filled with fresh urine, boiled, their necks drawn out to 1/12th of an inch in diameter and all left open to the air. The neck of one was left vertical, those of the other three were bent downward. The contents of the vertical necked flask soon putrified. The other three travelled with him from Glasgow to Edinburgh and thence to London, where they were accidentally destroyed by fire *ten years* after being prepared as described. During all these ten years the urine remained clear and undecomposed! If for ten years, why not undecomposed for a century!

The two chapters describing the reception of Lister's antiseptic system by the profession "at home" and "abroad" are most interesting. After nine years in Glasgow, Lister succeeded Syme in the chair of clinical surgery in Edinburgh, where his success as a teacher was as immediate as it had been in Glasgow, where he had "taken the students by storm." Here he created a school of enthusiastic pupils who in time won hospital positions as didactic and clinical teachers and practised antiseptis.

In 1877, at the age of fifty, he went to London to King's College as the successor of Sir William Fergusson, who had been easily and for long the foremost surgeon of the metropolis. But what a contrast! What a chilling frost! Instead of over 180 as at Edinburgh, the number of new students annually was less than 25! At his lectures the present distinguished surgeon, Sir Watson Cheyne, —one of four assistants who had gone with Lister from Edinburgh to London, as he had stipulated—was careful to attend, so that at least there might be a dozen auditors! "We four unhappy men . . . wandered about . . . the wards in other hospitals where the air was heavy with the odor of suppuration . . . and the flushed cheek spoke eloquently of surgical fever." In Edinburgh Lister had had "half a dozen wards with 60 or 70 patients" whereas at King's he had "only two wards . . . but only *empty beds*!" The extraordinary domi-

neering conduct of the nurses at King's will seem very strange to American surgeons and nurses.

In the London medical societies discussions on antiseptis were either listless or else hostile. Most of the surgeons did not really grasp the fundamentals of the system. Even Paget dressed a compound fracture of the leg by putting on collodion *at once* and then *12 hours later* applied carbolic acid! Yet he declared that the treatment "did no good" though he had taken "special care" to follow Lister's method! Mr. Savory, one of the leaders and surgeon to "Bart's" itself, in 1879 considered that an annual average of about 6 cases of pyemia, 20 of erysipelas and 26 of blood poisoning represented as good a result as it was reasonably possible to expect!

In 1876 in connection with the Centennial in Philadelphia, we held an International Surgical Congress. There I saw, heard and met Lister for the first time. The general tone of the discussion in the surgical section of which Lister was chairman, with the exception of a few, was that the system was little if anything more than "surgical cleanliness"! I was an attentive listener, was wholly converted to Lister's views and began to practise his method when I went on duty at St. Mary's Hospital, October 1, 1876, and have never for a moment ceased to be an enthusiastic disciple. My results were marvellously different from what they had been in the same hospital for ten years. "*Experientia docet.*" I *know* whereof I speak by bitter prior experience.

On the Continent, Saxtorph, Thiersch, Volkmann, Nussbaum, Championnière and others very early accepted the method and improved it. Then it came back re-vamped as it were to London, and finally, has won its way in a triumphant progress all over the civilized world.

Honors had begun to come thick and fast. The presidency of the Royal Society, degrees and honorary memberships from everywhere, a baronetcy and finally the peerage and the Order of Merit, limited to 24, and Lister was one of the first 12.

Then alas came the declining day with loss of physical and at last of mental vigor and finally the last closing of the eyes and a tablet in the Abbey.

Lister lived too long. It is better that every man should go before declining powers betray him. Strange to say both he and, if one may judge from various hints, his biographer also are disposed to be *laudatores temporis acti*, and mourn what seems to me a natural and inevitable development from antiseptis to asepsis, but which they regard as "a heresy."

So far from Lister's "practise having been discarded and his theory exploded" they have never been so firmly entrenched as now. Asepsis well suits civil practise in "clean" cases, but not in deeply infected cases. The Great War has recalled us to antiseptis, by reason of the intensity of its infections. The Carrel-Dakin method employs better antiseptics than carbolic and better methods of disinfection than Lister ever knew. The bacteriologist and the surgeon working together determine when a wound may be closed with assurance of success. Moreover if we can treat contaminated wounds early, before the bacteria have penetrated deeply and remove all the devitalized tissue and on and in it the great majority of the bacteria, the phagocytes can care for the remaining mild infection. Immediate closure may then be made.

It has remained for a non-medical snarling Irish critic, whose colossal egotism will readily suggest his name, and an anonymous medical reviewer both in the *Nation* (London) and another writer in the *English Review* whose article I have not seen, to belittle Lister and declare that he was not a great man.

With me the opinion of such judges as Volkmann, Virchow, Pasteur, Weir Mitchell and Lord Kelvin and the homage of thousands at the Great Congresses in London, Amsterdam, Philadelphia, Berlin, Montreal and elsewhere are enough. His detractors will have their day and cease to be, but "Humanity with uncovered head will salute" the Great Benefactor.

Is not my opening sentence correct?

Of course I had expected the superfluous "U" (a sort of intruding philological U-boat) in "tumour, labour," etc., although the Latin originals of all such words have no "u." Even the N. O. D. has "actor, also actour"! I must confess to surprise when I found the archaic "plaister" (which the N. O. D.) prints but marks "obsolete" especially as Lister himself wrote "plaster." W. W. KEEN

#### NOTES ON METEOROLOGY AND CLIMATOLOGY

##### THE "OLD-FASHIONED" WINTER OF 1917-1918<sup>1</sup>

EVEN though summer is upon us, it is not difficult to recall that last winter in the United States east of the Rockies was remarkably cold and snowy. The first killing frosts of autumn came early, and nipped crops which had started late and grown slowly in the cold spring and early summer. The South had a real winter, much to the detriment of fruit and truck crops which were caught by frost. By far the most intense winter conditions occurred in the regions from the Ozarks to New England, where low temperatures brought snow with passing cyclones, and the snow-cover in turn cooled the air excessively whenever the sky was clear. The unprecedented snow and ice blockades brought the well-known, long chain of uncomfortable and costly results.

In the eastern United States it was not surprising that autumn months which in many regions were the coldest on record, should be followed by a December and a January that defied the memories of the oldest inhabitants. For example, in Ohio, a 64-year record fails to show a colder December, and in New England, January seems to have been the coldest month at least since 1836, if an Amherst record may be considered as representative. In these cold months, new minimum temperatures were established broadcast. Early in December, for instance, temperatures as low as 20° to 31° below zero (F.) were observed

<sup>1</sup> A more extensive account is to be found in the *Geographical Review*, May, 1918, Vol. 5. This is based essentially on serial publications of the Weather Bureau, and on some press reports.